



Session One: General Asthma Education

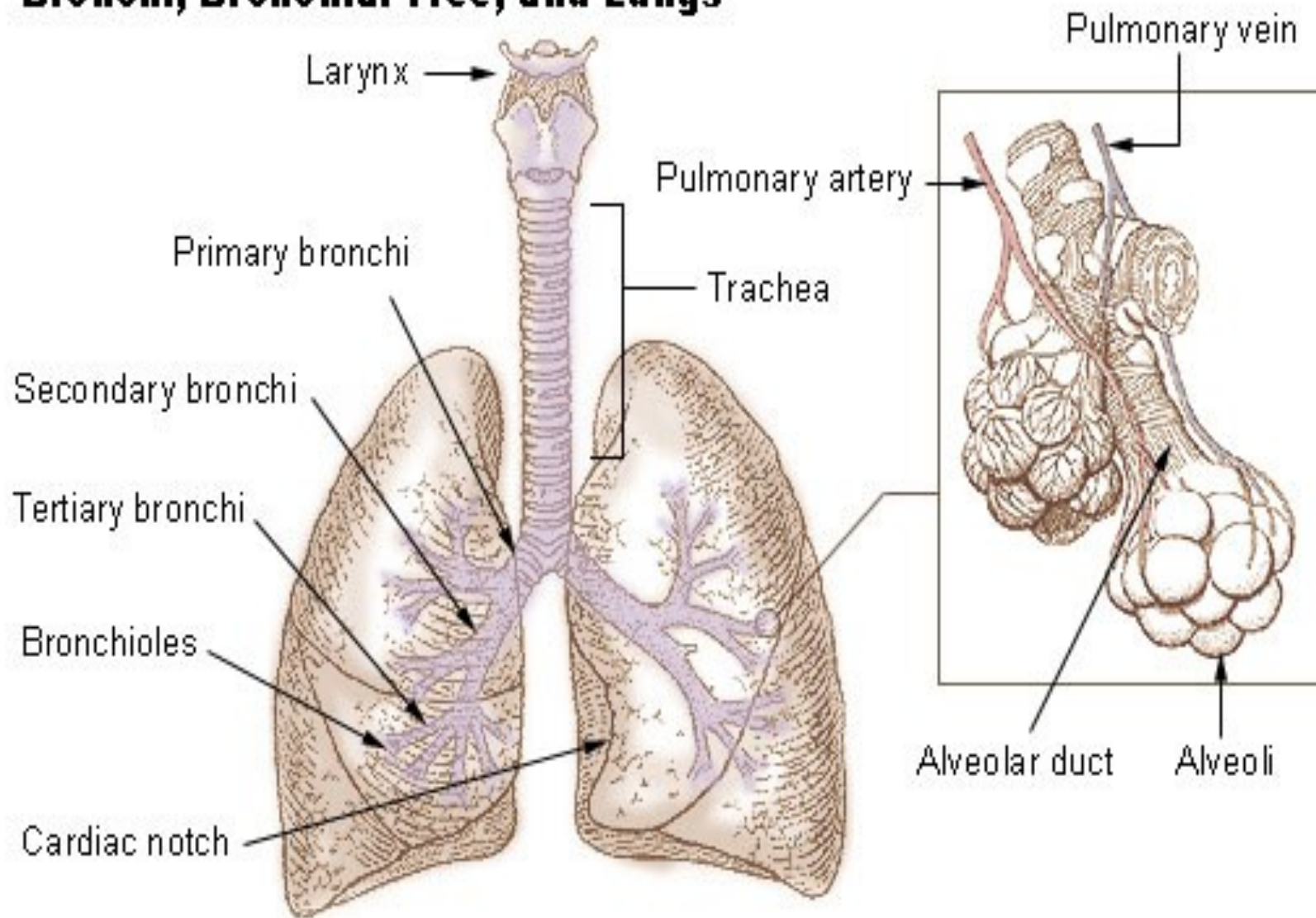
Asthma Education Curriculum

Normal Breathing

- First, we are going to discuss normal breathing.
 - When you breathe, air travels in through the nose and mouth, and goes into the lungs through the trachea, the bronchi, the bronchioles, and eventually reaches the alveoli. The trachea, bronchi and bronchioles are also known as your “airway”.
- The alveoli are where inhaled oxygen crosses from the airway into the bloodstream, and carbon dioxide crosses from the bloodstream into the airway to be exhaled
- There are smooth muscle bands that surround the bronchi and bronchioles; you cannot voluntarily control these muscles
- There are mucous glands that line the walls of the bronchi and produce a thin layer of mucous

Note: Consider using the 3D bronchiole and the stand-up asthma model at this time for further explanation

Bronchi, Bronchial Tree, and Lungs



Normal Breathing

Common Asthma Symptoms

- The most common asthma symptoms are cough, shortness of breath, chest tightness, and wheezing
- Each person with asthma may have symptoms that are a little bit different

Ask the patient: What does it feel like when you have an asthma attack? Do your symptoms change as your asthma attack gets worse?

Cough

Shortness of Breath

Chest Tightness

Wheezing

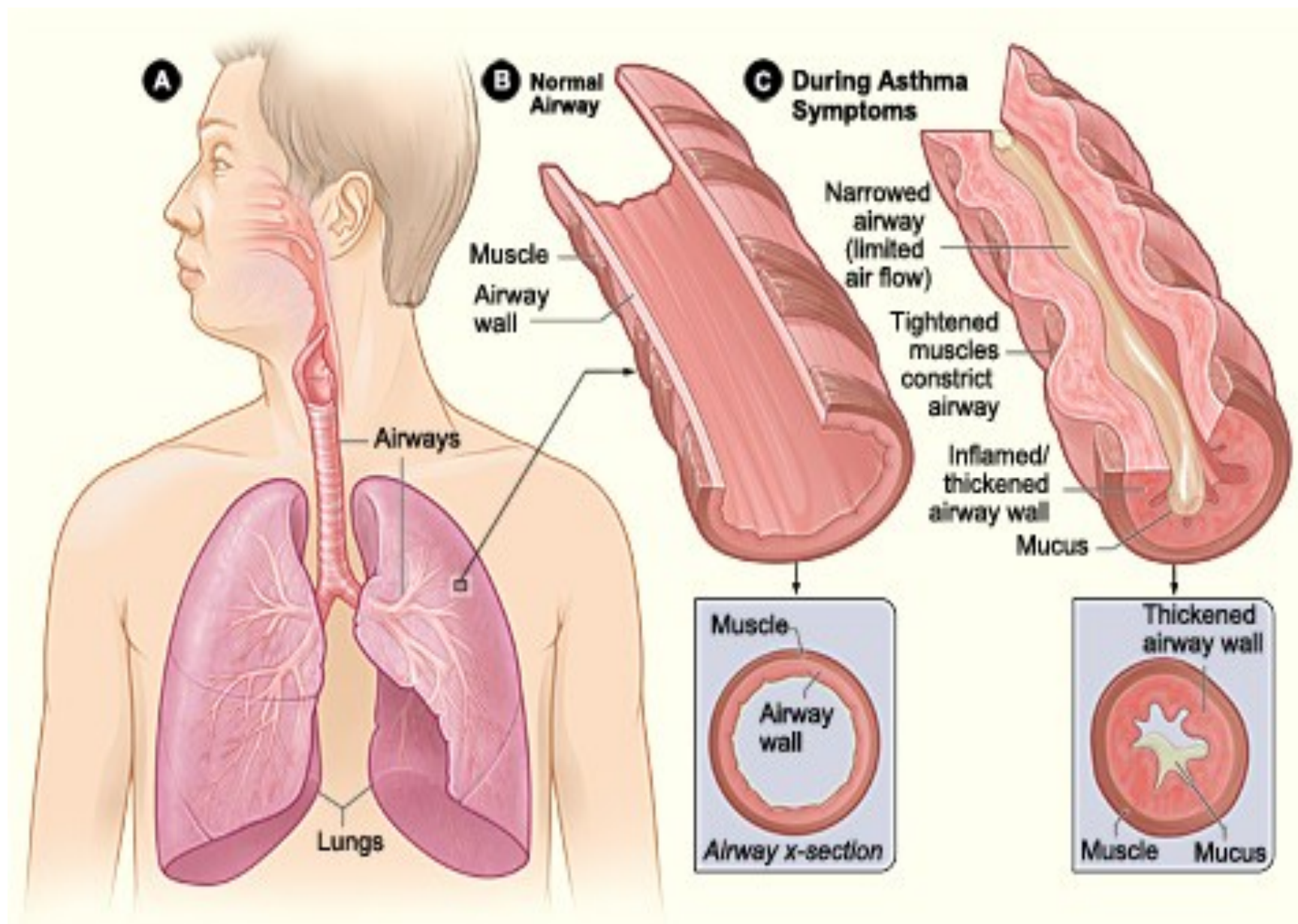


Common Asthma Symptoms

Airway Narrowing and Asthma Symptoms

- Asthma causes symptoms because the airways become narrowed throughout the lungs
- Airway narrowing can be caused by both: 1) muscle constriction of the smooth muscle surrounding the outside of the airway; and 2) swelling and inflammation of the airway walls with mucous production
- Inflammation of the airway and increased mucous production are the underlying or silent component of the disease that happens even when no symptoms are present
- Exposure to an asthma trigger can cause the smooth muscles around the airway to constrict, causing asthma symptoms- this is called an asthma attack; underlying swelling and mucous production in the airway can also become worse over the course of an attack

Note: Consider using the 3D model of the airway to demonstrate these principles



What happens during an asthma attack?

Asthma Triggers

- Asthma triggers are things that cause airway narrowing
- Everyone has different triggers
- Many triggers are things that are inhaled
- There are two types of asthma triggers: allergens and irritants
 - Common Allergens: furry and feathered animals (cats, dogs, mice, birds, etc.), mold, pollen, cockroaches, dust mites
 - Common Irritants: tobacco smoke, volatile organic compounds, wood smoke, and diesel exhaust
- Additional asthma triggers include: colds and the flu and other respiratory infections, stress, strong emotions like laughing or crying, and cold weather
- The list above includes potential triggers, though not all are necessarily causing your child's asthma symptoms; exposure to any known asthma trigger should be investigated further

Ask the patient and parent: What are your specific asthma triggers? What do you do to remove these triggers from your environment or avoid them?



Asthma Triggers

Exercise-Induced Asthma

- For many people with asthma, their symptoms get worse with exercise.

Ask the patient and parent: Is this true for you? If so, what do you do when your asthma gets worse from exercise?

- Note that up to 90% of people with asthma may experience worsening symptoms with asthma
- There are two important things you can do to help prevent exercise induced asthma:
 - Warm up slowly before you exercise
 - Use your rescue inhaler BEFORE you exercise to prevent symptoms. This is called “pretreating” for asthma. We will talk more about your asthma medications in a few minutes.



Exercise and Asthma

Medications and Devices

- There are two types of asthma medications: 1) rescue or quick-relief medications, and 2) controller medications
 - Rescue medications (like albuterol) are used when you have asthma symptoms. They work by relaxing the smooth muscle that is squeezing the airway (you can refer back to the 3D lung model to demonstrate this)
 - Controller medications work by reducing the inflammation in the airway
 - To work properly, controller medications need to continue to be taken every day, even when you feel completely well
 - Inhaled corticosteroids are the most effective controller medications for the long-term management of persistent asthma
- Ask the parent and child to bring out all of their asthma medications. Review each asthma/allergy medication that the child has been prescribed with the parent and child (if necessary, refer to Lippincott's for further information about the medications)
 - Name of each medication
 - Dosage
 - Medication schedule
 - Possible side-effects
 - Whether the medication is a controller medication or a quick-relief/rescue medication

Controller

Rescue



Asthma Medications

Spacers

- Spacers can be helpful in ensuring that a larger amount of medication makes it to your lungs

Note: Demonstrate how a spacer works with an inhaler

Inhaler Technique

- Let's talk about the proper way to use your inhaler.

Note: Have the child demonstrate each of the inhalers that they may use; use demonstration inhalers as necessary to demonstrate proper technique. If applicable, have the child and parent/guardian demonstrate use of the nebulizer.



Inhaler Technique

Asthma Action Plans

- The purpose of an asthma action plan is to provide instructions about how to respond to and treat your asthma, both when you are feeling well and when you having asthma symptoms
 - Asthma action plans should include instructions for:
 - Daily treatment, and
 - How to recognize and handle worsening asthma
- All people with asthma should receive a written asthma action plan

Ask the patient: Do you have an asthma action plan? If yes, have them bring out the plan and discuss it. Determine whether the plan needs to be updated. If not, talk about how you will be in touch with the child's healthcare provider to ensure that they receive a plan.

Montana Asthma Action Plan

Child _____ Age _____ Visiting Nurse _____ Phone _____
Parent/Guardian _____ Main Phone _____ Alternate Phone _____
Child's Healthcare Provider _____ Phone _____ Fax _____

Green Zone	Child is feeling well <ul style="list-style-type: none">• No difficulty participating in usual activities• No chest tightness, shortness of breath, wheezing, or coughing during the day or night <p>Take these controller medications every day:</p> <p>Medicine _____ Dosage _____ When to Take it _____</p> <p>_____</p> <p>_____</p> <p>Before exercise: Medication _____ Dosage _____ _____minutes prior to activity</p>
	Yellow Zone <p>Child is not feeling well<ul style="list-style-type: none">• Chest tightness, shortness of breath, wheezing, or coughing with usual activities• Waking at night due to asthma symptoms<p>Continue taking controller medication(s) and add these quick-relief medications:</p><p>Medicine _____ Dosage _____ When to Take it _____</p><p>_____</p><p>Call child's healthcare provider if: _____</p></p>
Red Zone	Alert! Contact child's healthcare provider or call 911 if: <ul style="list-style-type: none">• Quick-relief medication is not helping• Breathing is hard and fast• Ribs are showing and nostrils are flaring• Can't walk or talk well <p>Take the following medications, and call the child's healthcare provider or 911 right away:</p> <p>Medicine _____ Dosage _____ When to Take it _____</p> <p>_____</p>

Other key medical information

The child's asthma triggers are _____
Additional information: _____

Reviewed by parent/guardian _____ Date _____
Reviewed by home visiting nurse _____ Date _____
Reviewed by child's healthcare provider _____ Date _____



Asthma Action Plan

Follow-up Visits

- It is very important to have a trusting relationship with a doctor or other healthcare provider who regularly sees you for your asthma
- Asthma changes over time, so it is important that your healthcare provider knows your history and keeps track of you over time
- As your disease changes, the medication type, dose, and frequency may need to be changed/adjusted by your healthcare provider as the control of the child's asthma changes

Ask the patient: Who is your regular healthcare provider? Do you feel that you have a trusting open relationship with this person? Discuss how you will be in contact with this provider to share what has happened during the home visit and how you will be working to better coordinate the care for the child.



Follow-Up Care



Session Two: Environmental Triggers

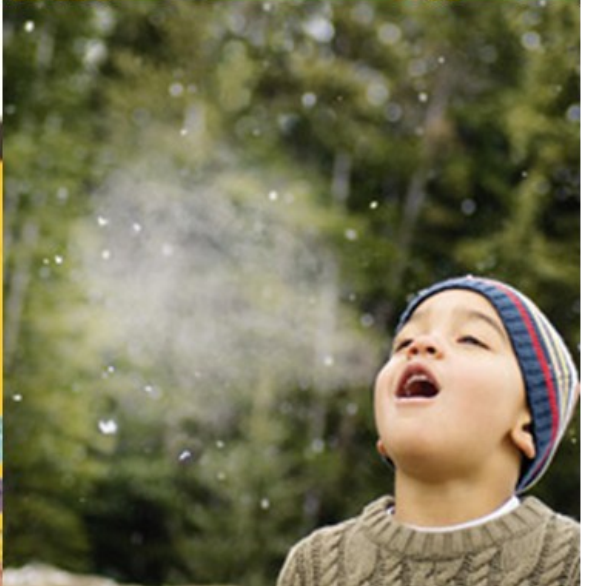
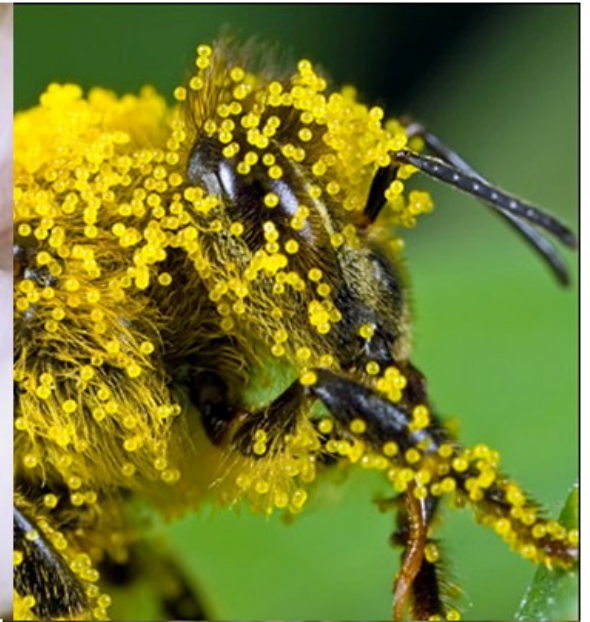
Asthma Education Curriculum

Asthma Triggers

- We're going to review a little bit about asthma triggers today.

Ask the patient and parent/guardian: Do you remember what asthma triggers are?

- Asthma triggers are things that cause airway narrowing
- Everyone has different triggers; Although one thing may be an asthma trigger for someone else, it does not necessarily mean that that thing is an asthma trigger for you as well
- Asthma triggers can be divided into two main groups— irritants and allergens
 - Irritants are triggers that, in sufficient quantities, can affect anyone with asthma
 - Allergens are those triggers that cause asthma symptoms in people who have an allergy to that particular trigger
- We're going to cover some of the most common asthma triggers today, starting with the irritants. Remember that not all of these things may be asthma triggers for you.



Asthma Triggers

Wood Smoke

- The products of wood smoke combustion can trigger asthma
- This exposure could occur during wildfire season, or from fireplace or wood stove smoke
- Wood smoke contains a wide variety of potentially harmful substances, including: nitrogen oxides, volatile organic compounds (VOCs), and particulate matter (microscopic smoke particles)
- During wildfire season (and throughout the year), you can check your local outdoor air quality on the web at todaysair.mt.gov (air quality levels are also often announced on the local television news and in your local newspaper); stay indoors with the windows closed if the air quality is “Unhealthy for Sensitive Groups” or worse; also stay indoors with the windows closed if the air is visibly smoky
- If burning wood to heat your house, consider using an EPA-certified wood stove (EPA certified wood stoves have a temporary paper label attached to the front and a permanent metal label affixed to the back of the wood stove)

Ask the patient and parent/guardian: Have you experienced effects from wildfire smoke? Do you burn wood for heat? Do you have an EPA-certified wood stove?



Irritant: Wood Smoke

Tobacco Smoke

- Tobacco smoke is a potent asthma trigger for many people
- Exposure can occur when smoking a cigarette, or through inhaling secondhand tobacco smoke
- In some cases, very small amounts of secondhand tobacco smoke are all that is necessary to cause an asthma attack
- In addition to being an asthma trigger, exposure to secondhand smoke has been associated with other diseases, including: ear infections, chronic bronchitis, emphysema, lung cancer, and cardiovascular disease
- It is best to not allow anyone to smoke in your home or car!

Note: Give out the smoking mailer, magnets, and window clings that refer to the hazards of secondhand smoke. Ask if anyone in the household smokes. If so, remind the parent/guardian that the Montana Tobacco Quitline is an available resource.

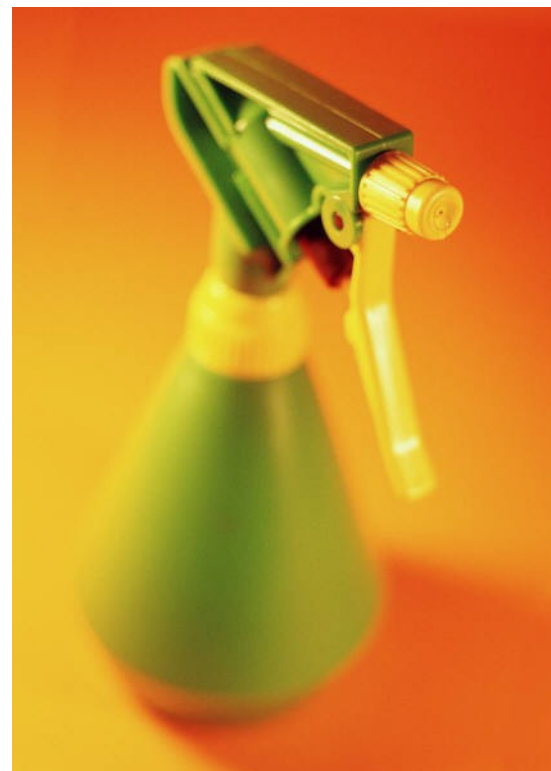


Irritant: Tobacco Smoke

Volatile Organic Compounds

- Volatile organic compounds, or VOCs, are another type of asthma trigger
- VOCs are found in some cleaning products
- VOCs are also found in oil-based paints and other chemicals (like perfumes)
- There are a couple of strategies that patients with asthma can use to prevent exposure to VOCs. These include: staying out of the room when products with VOCs are being used, and making sure that adequate ventilation is present when products with VOCs are being used.
- Oftentimes, substances like baking soda, water, or vinegar can be used to clean around the house. The use of these substances can result in less irritation of the airways in people with asthma and may be a good alternative to harsher cleaning products.

Ask the patient and parent/guardian: Have you ever had a reaction to cleaning products, paints, or other chemicals? If so, have you considered using different products?



Irritant: Volatile Organic Compounds

Feathered and Furry Animals

Tell the patient and parent/guardian: We are now going to discuss the allergens. Remember that you may or may not be allergic to any of these allergens that we discuss.

- Many people are allergic to feathered and furry animals like birds, cats, dogs, and rodents (rats, mice, etc.)
- Asthma triggered by cat allergen is especially common
- These animals could be present in your home as pets (cats, dogs, birds), or as pests (mice, rats)
- If you are allergic to your pet, and it is causing you to have asthma symptoms, it is recommended that you find another home for your pet
 - If not, at least keep the animal out of your bedroom; HEPA filters may also be somewhat effective at removing cat allergen from the air
- If you have rats or mice in your home, you need to have them removed

Ask the patient and parent/guardian: Do you have any pets? Do your pets come inside or into the child's bedroom? Have you noticed any mice or rats in your home?

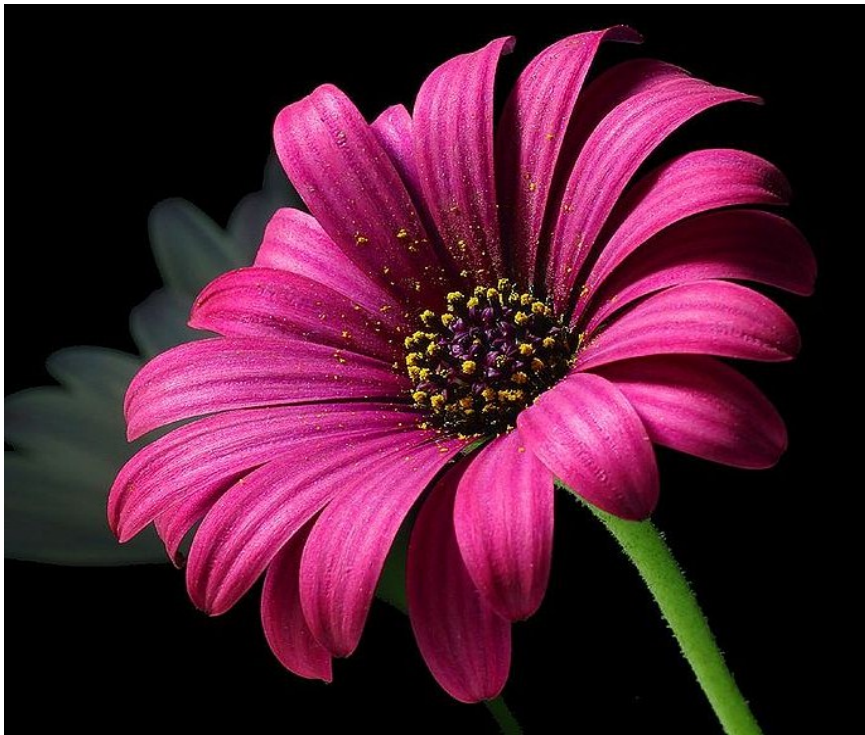


Allergen: Furry and Feathered Pets

Pollen

- Pollen is an allergen that can trigger asthma symptoms in allergic individuals
- Pollen is produced by many trees, weeds, grasses, and flowering plants (but people usually do not become allergic to flowering plants)
- Pollen counts are highest between March and October
- Pollen counts are also higher in the morning than in the afternoon
- Hot, dry, and windy days also tend to be worse for those with pollen allergies
- Pollen forecasts are often in the newspaper and on the local TV news station; pollen counts in Missoula are available on the internet at pollen.aaaai.org
- When pollen counts are high, several steps can be taken to prevent exposure: 1) avoid exercising outdoors in the early morning; 2) after being outdoors for great lengths of time, shower and change clothes when returning inside; 3) use air conditioning, if available, instead of opening windows to the outside during hot weather

Ask the patient and parent/guardian: Is your asthma worse when pollen levels are high? If so, do you stay indoors during times of high pollen levels?



Allergen: Pollen

Mold

- Mold can be both an irritant and an allergen
- Damp indoor environments can lead to mold growth
- Leaky faucets, roofs with holes in them, and improperly ventilated bathrooms can lead to damp indoor conditions
- If there are places in your home that are damp or collecting water, take action! Damp indoor environments may also be causing other respiratory-related symptoms
- Mold spores in the outdoors can also cause asthma symptoms
- Outdoor mold levels may be highest in the autumn

Ask the patient and parent/guardian: Are there any damp or wet areas inside your home? Do you smell mold or mildew? Is your home between 30-50% relative humidity?



Allergen: Mold

Dust Mites

- Dust mites are tiny, microscopic animals that live within house dust
- Dust mites feed on the shed skin of humans and pets
- Dust mites are found where our shed skin is left behind— beds, pillow, blankets, carpeting, upholstered furniture
- There is currently controversy on the importance of dust mites as asthma triggers within Montana; more research is needed to determine the prevalence of dust mites within the state
- Allergen impermeable covers for pillows, mattresses, and box springs, and washing bed sheets and blankets weekly in hot water ($>130^{\circ}\text{F}$) will reduce exposure to dust mite allergen



Allergen: Dust Mites

Cockroaches

- Cockroaches are a common asthma trigger, especially in the inner cities
- Cockroaches are not often seen in Montana; however, in some limited cases they can be present
- Cockroach allergen is found in the waste products, eggs, and outer coverings of the cockroaches
- Keeping the home clean and free of dampness helps to prevent possible infestations of cockroaches

Ask the patient and parent/guardian: Have you ever seen any cockroaches in your home?
If so, what steps have you taken to eliminate them?



Allergen: Cockroaches

Exercise-Induced Asthma

- Symptoms can get worse with exercise for up to 90% of people with asthma
- To prevent exercise-induced asthma, there are two steps that you can take:
 - Warm up slowly before exercising
 - Use your rescue/quick-relief inhaler 10-15 minutes prior to exercise (pretreatment)
- Cold weather may also cause asthma attacks

Ask the patient and parent/guardian: Have you experienced exercise-induced asthma symptoms? If so, have you tried adding a warm-up period and utilizing pretreatment?

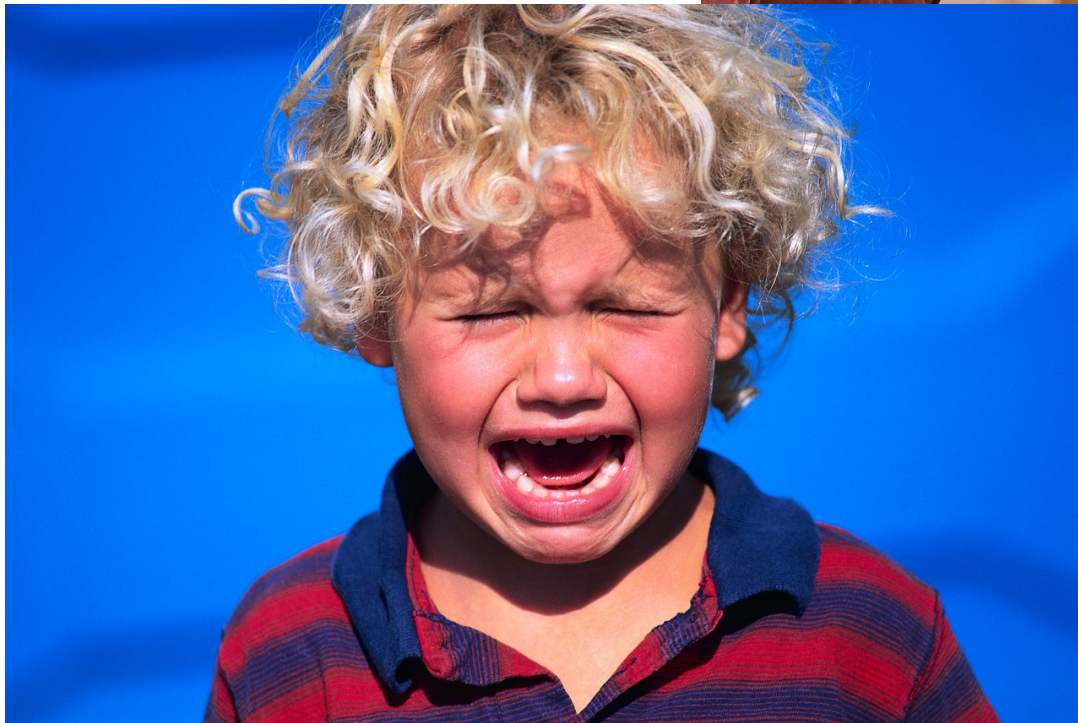


Other Triggers: Exercise/Cold Weather

Other Asthma Triggers

- Colds, influenza, and other respiratory infections can also be important asthma triggers
 - It is important to get an annual flu shot, and to wash your hands with soap and water regularly— especially during the cold and flu season
- Stress and strong emotions (like crying) can provoke asthma symptoms

Ask the patient and parent/guardian: Of all the triggers we have talked about-which ones affect you most? What can you do to avoid or remove these triggers?



Other Triggers



Sessions Four and Six: Review Sessions I
and II

Asthma Education Curriculum

Review of Asthma Symptoms

- Today, we're going to do a brief review of some of the information about asthma that we covered in previous meetings

Ask the child and parent/guardian: Do you remember what the four most common symptoms of asthma are? (show the chart after the child and parent/guardian answers)

- The most common asthma symptoms are cough, shortness of breath, chest tightness, and wheezing
- Remember, though, that everyone's asthma symptoms are a little different

Ask the child and parent/guardian: Have you had any of these symptoms since our last visit? What did you do when you started having symptoms?

Cough

Shortness of Breath

Chest Tightness

Wheezing

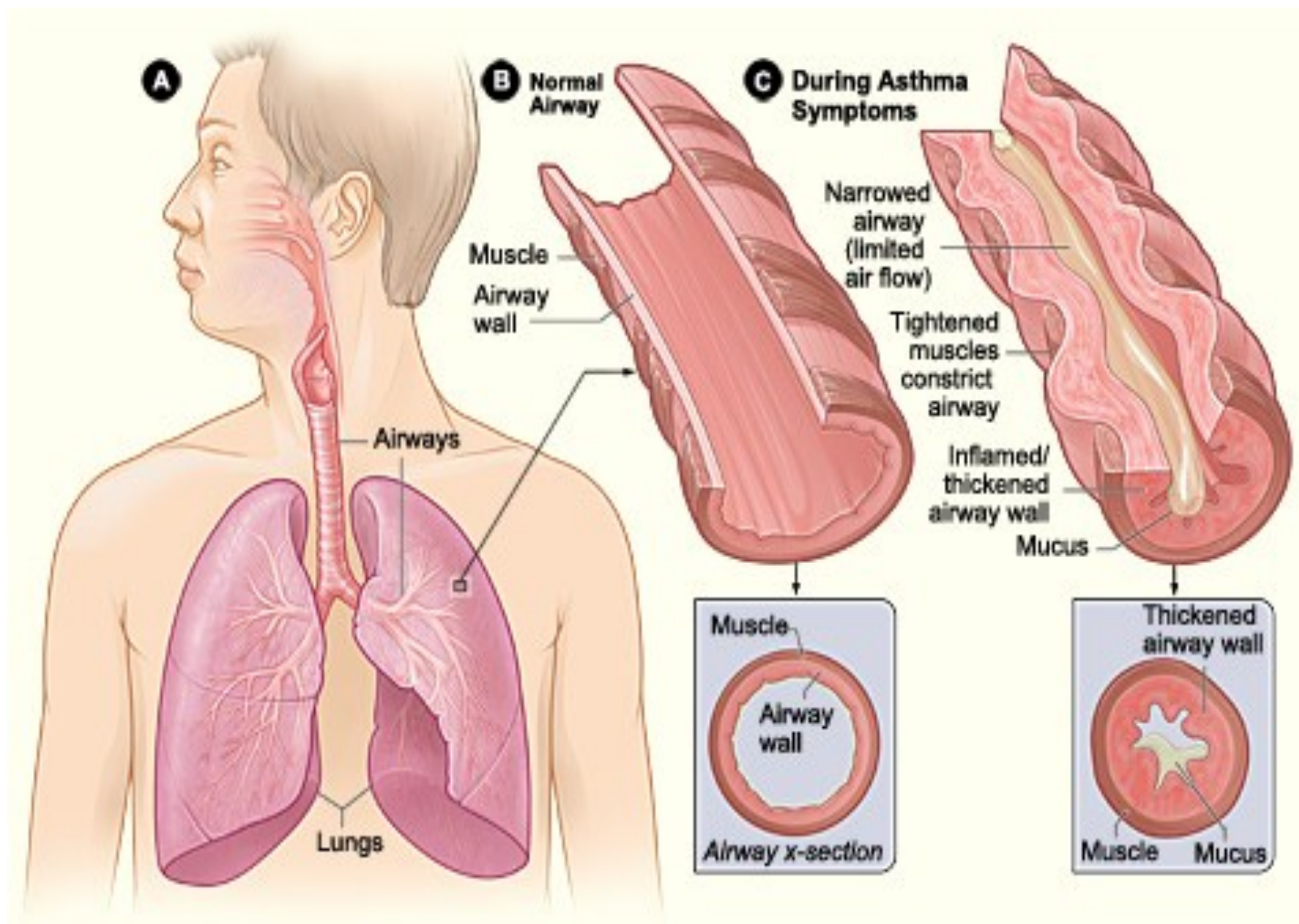


Common Asthma Symptoms

Review of Airway Narrowing

Ask the child and parent/guardian: Do you remember what happens in your body to cause asthma symptoms? (show the chart after the child and parent/guardian answers; can also use the bronchiole or the lung model to demonstrate)

- Asthma causes symptoms because the airways become narrowed throughout the lungs
- Airway narrowing can be caused by both: 1) muscle constriction around the outside of the airway; and 2) swelling and inflammation of the airway with mucous production

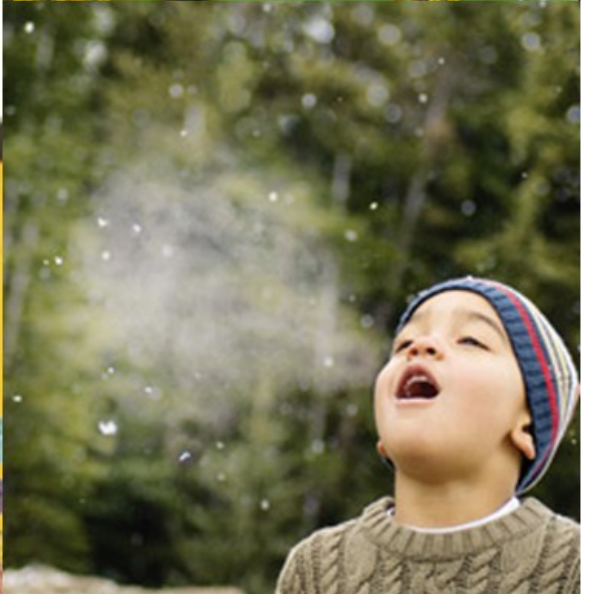
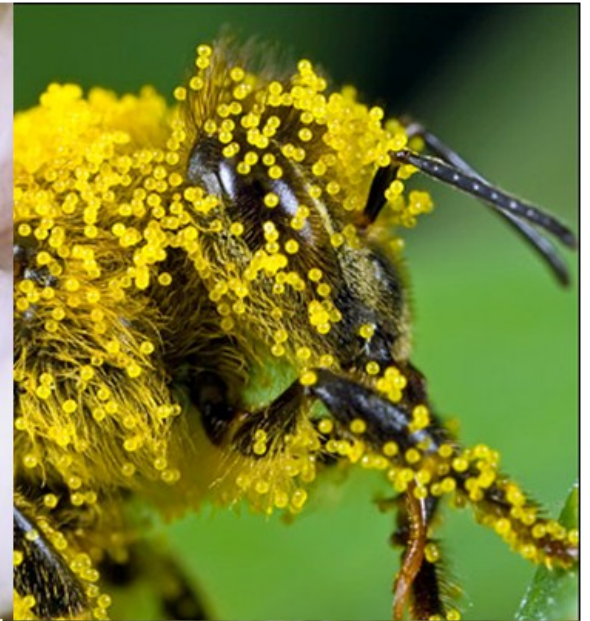


What happens during an asthma attack?

Review of Asthma Triggers

Ask the child and parent/guardian: Do you remember what asthma triggers are? Have you learned of any new asthma triggers for you since we first met?

- Asthma triggers are things that cause airway narrowing
- Everyone has different triggers; Although one thing may be an asthma trigger for someone else, it does not necessarily mean that that thing is an asthma trigger for you as well
- Asthma triggers can be divided into two main groups— irritants and allergens
 - Common Allergens: furry and feathered animals (cats, dogs, rodents, birds, etc.), mold, pollen, cockroaches, dust mites
 - Common Irritants: tobacco smoke, volatile organic compounds, wood smoke, and diesel exhaust
 - Other asthma triggers include exercise, respiratory infections, stress/strong emotions, and cold weather



Asthma Triggers

Review of Asthma Medications

Ask the child and parent/guardian: Do you remember what the two types of asthma medications are? (show the chart after the child and parent/guardian answers)

- There are two types of asthma medications: 1) rescue or quick-relief medications, and 2) controller medications
 - Rescue medications (like albuterol) are used when you have asthma symptoms, and before exercise to prevent asthma symptoms. They work by relaxing the smooth muscle that is squeezing the airway
 - Controller medications work by reducing swelling and inflammation in the airway
 - To work properly, controller medications need to continue to be taken every day, even when you feel completely well
 - Inhaled corticosteroids are the most effective controller medications for the long-term management of persistent asthma

Review the child's individual medications with the child and parent/guardian(s), including dosage and time of administration

Controller

Rescue



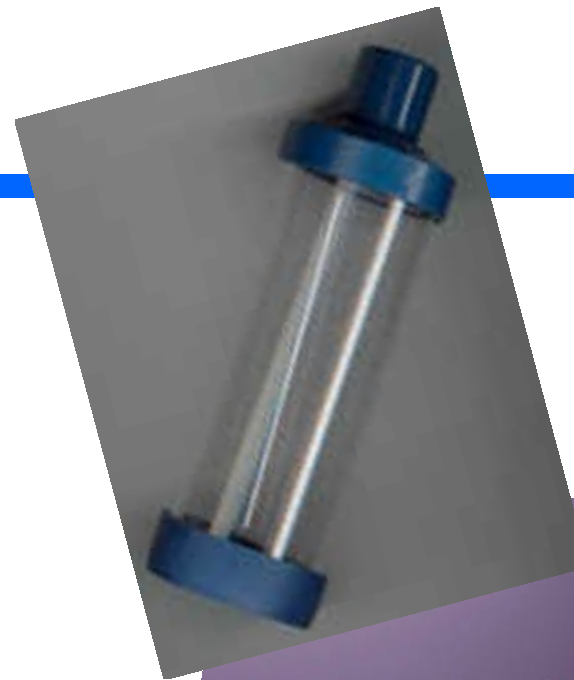
Asthma Medications

Review of Inhaler Technique

Ask the child and parent/guardian: Can you demonstrate your inhaler technique to me?
Do you have any questions about using your inhaler(s)?

- Use demonstration inhalers as necessary to demonstrate proper technique
- If applicable, have the child and parent demonstrate use of the nebulizer

Ask the child and parent/guardian: What do you do when you experience asthma symptoms? Do you carry a copy of your asthma action plan with you? Is the asthma action plan readily available at school?



Inhaler Technique

Follow-up Visits

To the child and parent/guardian: We talked about the importance of follow-up visits during a previous session. Can you name some reasons why it is important to see your healthcare provider on a regular basis?

- Asthma changes over time, so it is important that your healthcare provider knows your history and keeps track of you over time
- As your disease changes, the medication type, dose, and frequency may need to be modified by the healthcare provider as the control of the child's asthma changes



Follow-Up Care